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ARRAY-BASED PHOTOACOUSTIC SPECTROSCOPY**Abstract of the Invention**

Methods and apparatus for simultaneous or sequential, rapid analysis of multiple samples by photoacoustic spectroscopy are disclosed. A photoacoustic spectroscopy sample array including a body having at least three recesses or affinity masses connected thereto is used in conjunction with a photoacoustic spectroscopy system. At least one acoustic detector is positioned near the recesses or affinity masses for detection of acoustic waves emitted from species of interest within the recesses or affinity masses.

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